AIR LIQUIDE™ WELDING	**MMA UNITS 125-130A**	Language: English Date Creation: Jan. 2005 Rev.: 00

Service Manual

1.0 REPAIR INSTRUCTIONS

1.1 GENERAL CLEANING

Remove the machine shell and clean carefully with compressed air.

1.2 MACHINE: VISUAL INSPECTION

1. Check the general conditions of the electronic circuit ref. 1, particularly:
   - the varistor (RV1) (fig. 1) if it presents bursting marks
   - the state of the levelling condensers C32 and C33 (fig. 2) check if there are swellings or breaks on the container

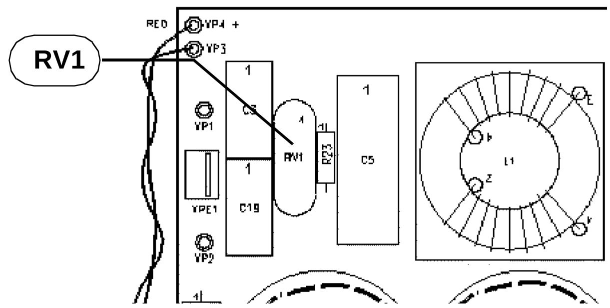


FIG. 1 REF. 1

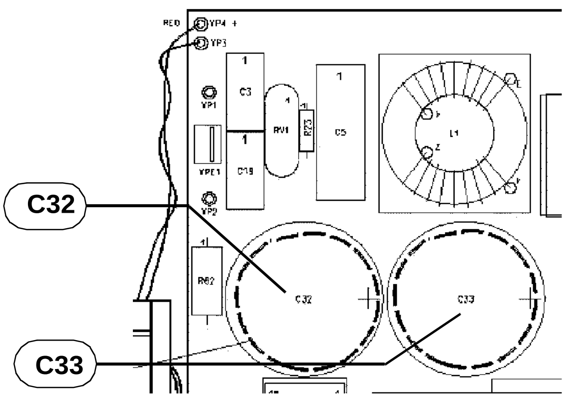


FIG. 2 REF. 1

   - check for the presence of cracks or breaks on the welds of the following components:
     - transformer T1
     - impedance L2
   - the presence of burn tracks or electric discharge marks on the printed circuit

In case of faults, replace the electronic circuit ref. 1

2. Check on all the harnesses the insulation of the cables and the state at the connection points.

1.3 CHECK OF THE MAIN COMPONENTS WITH TESTER (OHMMETER) ON THE CIRCUIT REF. 1

1. Check for the presence of short circuits on the rectifier bridge (VD1) and the correct value of the power resistance (R14) (fig. 3).

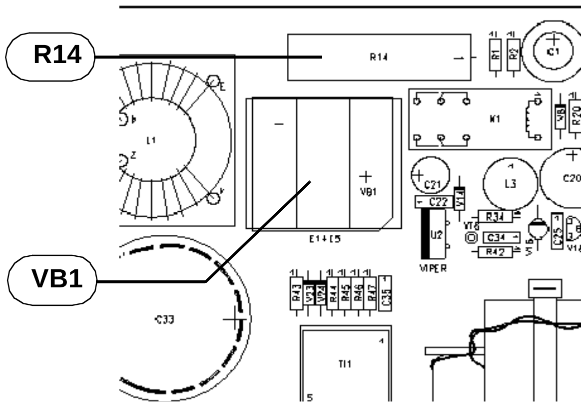


FIG.3
RIF. 1

1. IGBT of the primary circuit and diodes of recycle: test points G-C, G-E, C-E of components 1 and 2; points A-K of components 3 and 4 (fig. 4).

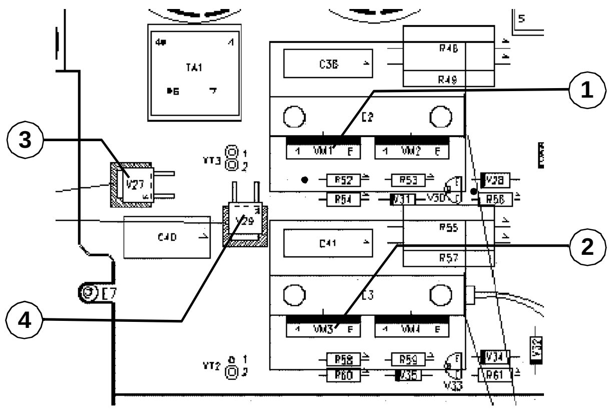


FIG. 4 RIF. 1

2. Diodes of the secondary circuit: check points 1-K of diodes VD1 and VD2 (fig. 5).

   If there are short circuits or faults during these tests, replace the electronic circuit.

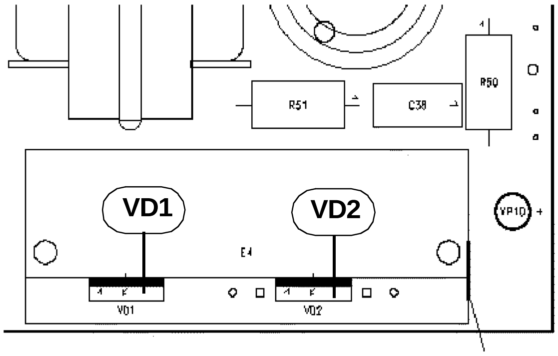


FIG. 5 REF. 1

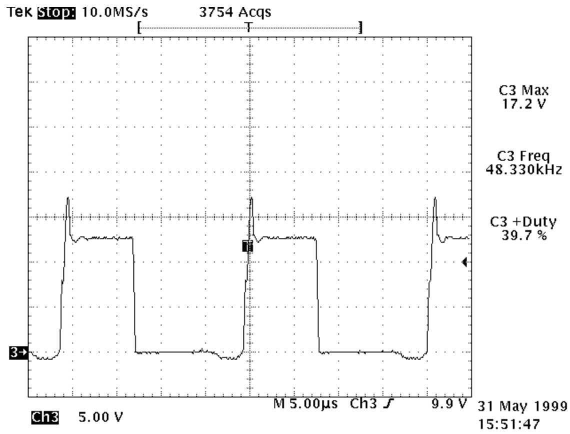


FIG. 8 REF. 1

1.4 CHECK OF GENERATOR OPERATION WITH OSCILLOSCOPE AND VOLTMETER

1. Connect a feeder on the zener V13 with GND on the anode and supply with approx. 15Vdc; set the oscilloscope on a time base of 5 uS and a range of 0.5 V/Div with probe x10 and verify:
   - the presence between points: E (GND) - A (probe) and F (GND) - B (probe) (fig. 6) of the waveform shown in fig. 7: if the waveform differs from the one in the figure or it is not present, the electronic circuit is broken. **Solution**: board replacement ref. 1.

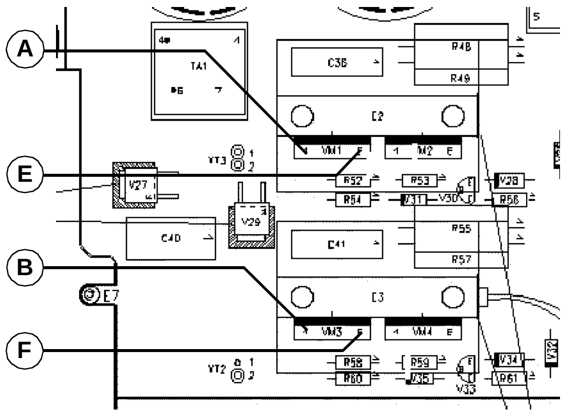


FIG. 7 REF. 1

2. Disconnect the feeder; set the oscilloscope with a range of 1V/Div and connect the probe X100 between points M and P (fig. 9); connect the machine to the power supply, switch it on:

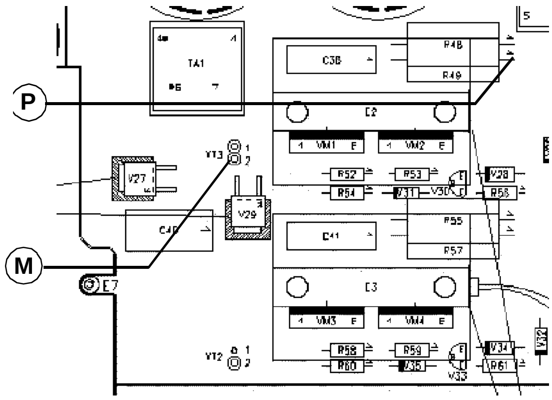


FIG.8 RIF. 1

- the motor fan starts up, and after approx. 2 seconds a wave will appear as in fig. 9.

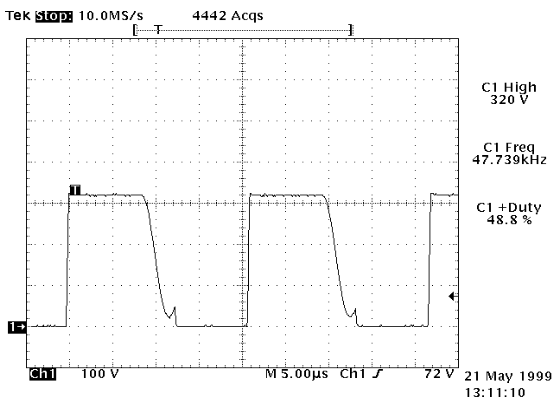


FIG. 9 REF.1

- check with a voltmeter that the output voltage is approx. 47Vdc (see test specification point 2).
- If the wave form does not appear or the output voltage is not correct, replace the electronic circuit ref. 1

Carry out the final test after the repair.

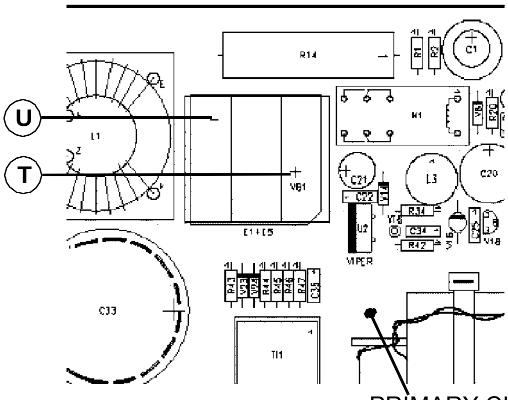


FIG. 10 RIF. 1

PRIMARY CIRCUIT OF THE TRASF.

2.0 FINAL TEST

1. Carry out the safety test according to our operative instruction N. SLL12, before proceeding, act as follows:
   - on the electronic board (ref. 1) short-circuit points U, T and a rheophore of the primary circuit of the transformer (fig. 10)
   - switch on
   - short-circuit the feeder plug
   - short-circuit the output dinse..

After the test remove all the short circuits and switch off.

2. Connect the generator to the power supply (230 Vac), switch it on and check if the voltage of the outputs is 47 Vdc (+/- 5%): switch off the generator.
3. Connect the generator to the resistive load: the load must be regulated so that the voltage on the load, with maximum current, is between 20V and 23V. Apply oscilloscope probe as in fig. 8
4. Set the regulation knob to the centre of the dial, switch on the generator, turn the knob to the maximum welding current and read with the amperometer the maximum current indicated on the technical table with +/- 5% tolerance. You will see on the oscilloscope a waveform as in fig. 11.
5. If the current readings differ, use the trimmer T (fig. 13) to obtain the correct current value.
6. Short-circuit the load and verify that after 1,5 sec. the current descends to approx. 25A.
7. Regulate the resistive load to measure the minimum current (5A - 20V), set the minimum current on the frontal panel and check with the amperometer that there is a value near than the one indicated on the technical table.
8. Disconnect the probe, switch off the generator and with the load to the maximum current, let the machine work at the greatest capacity.
9. Carry out MMA welding tests at maximum current (one electrode)

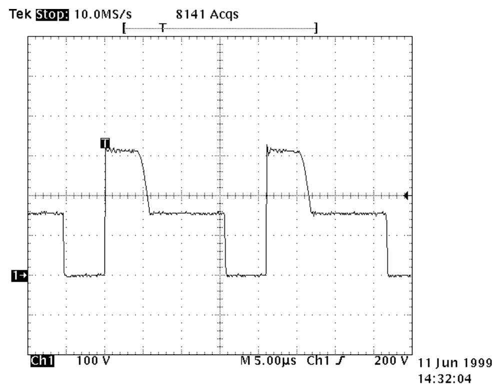


FIG. 11 REF. 1

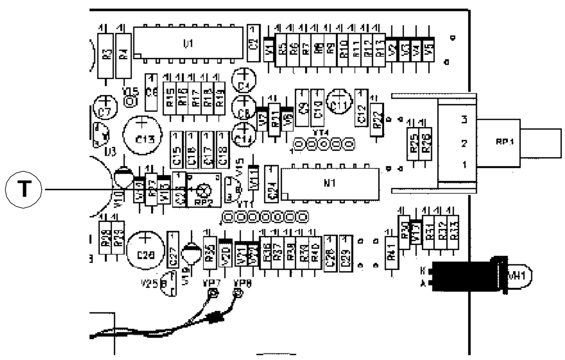
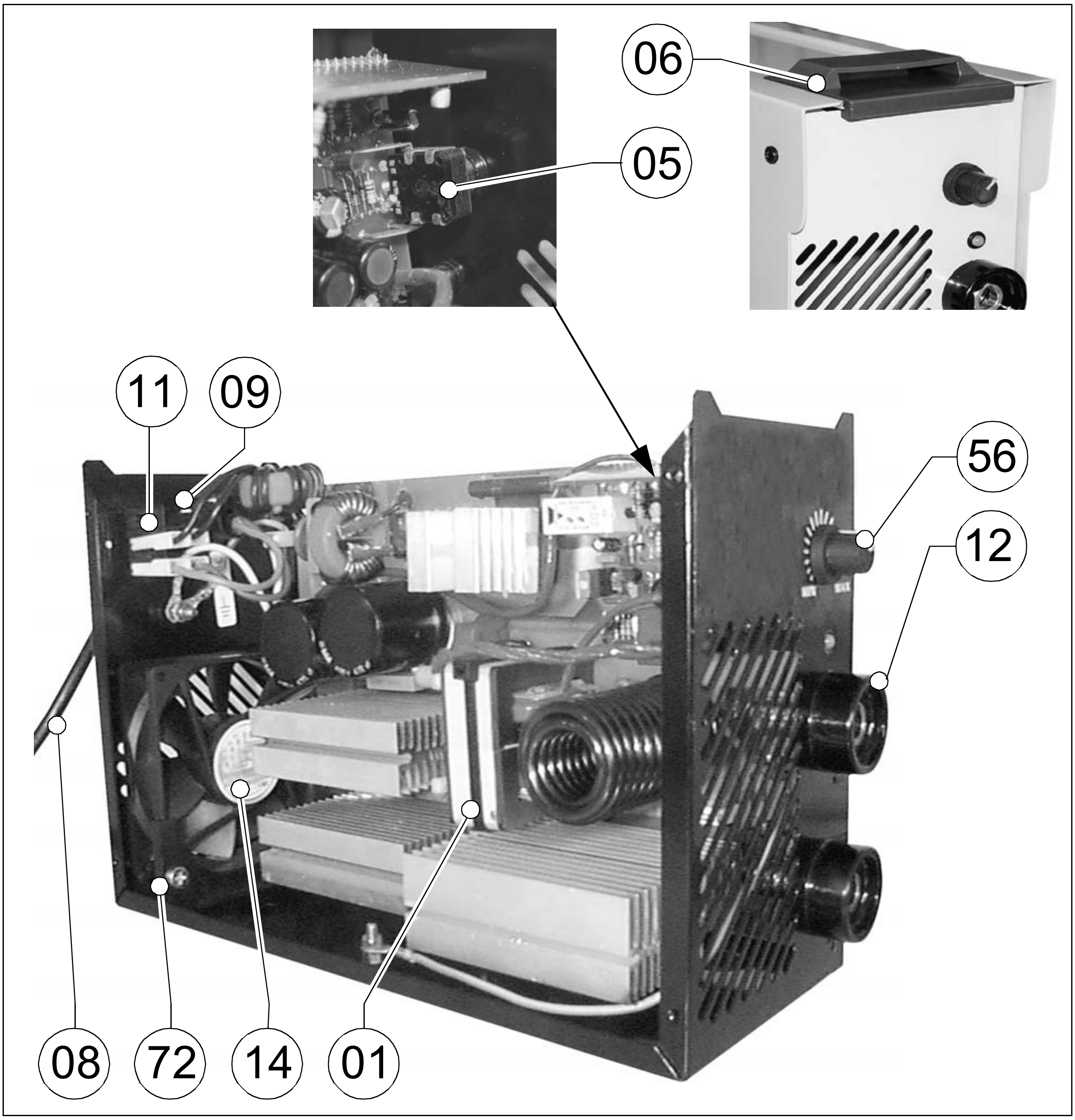


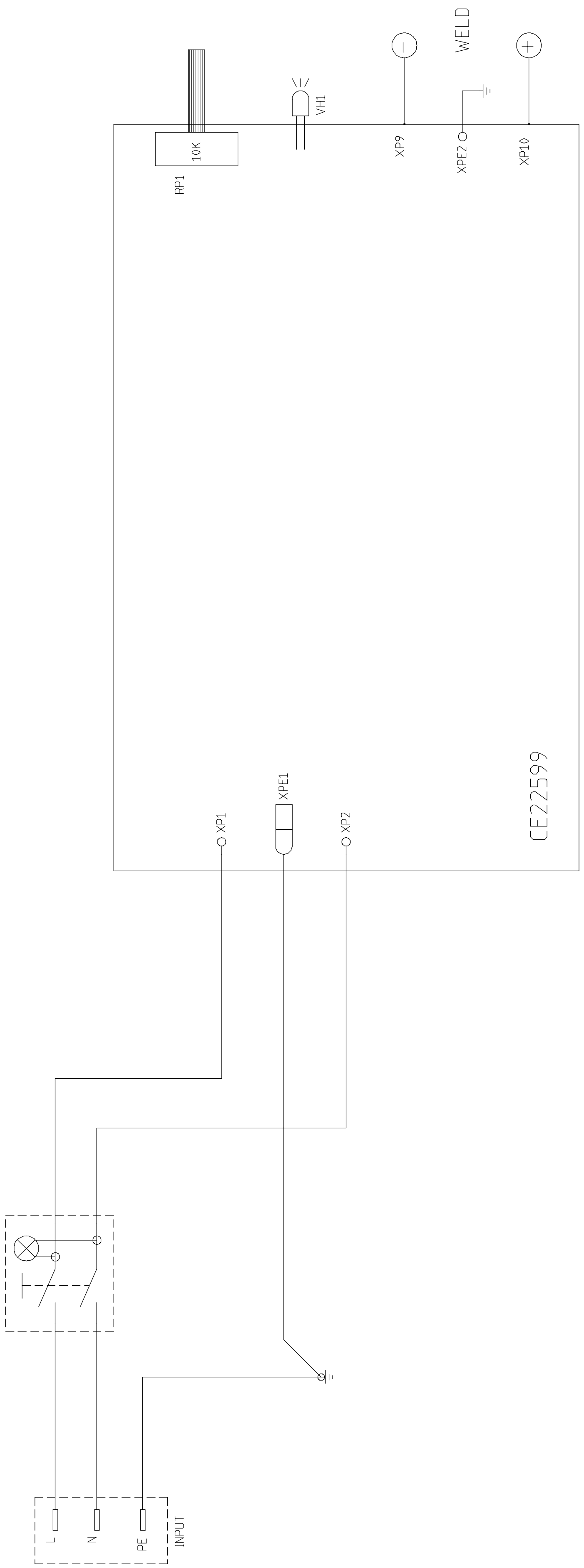
FIG. 12 REF. 1

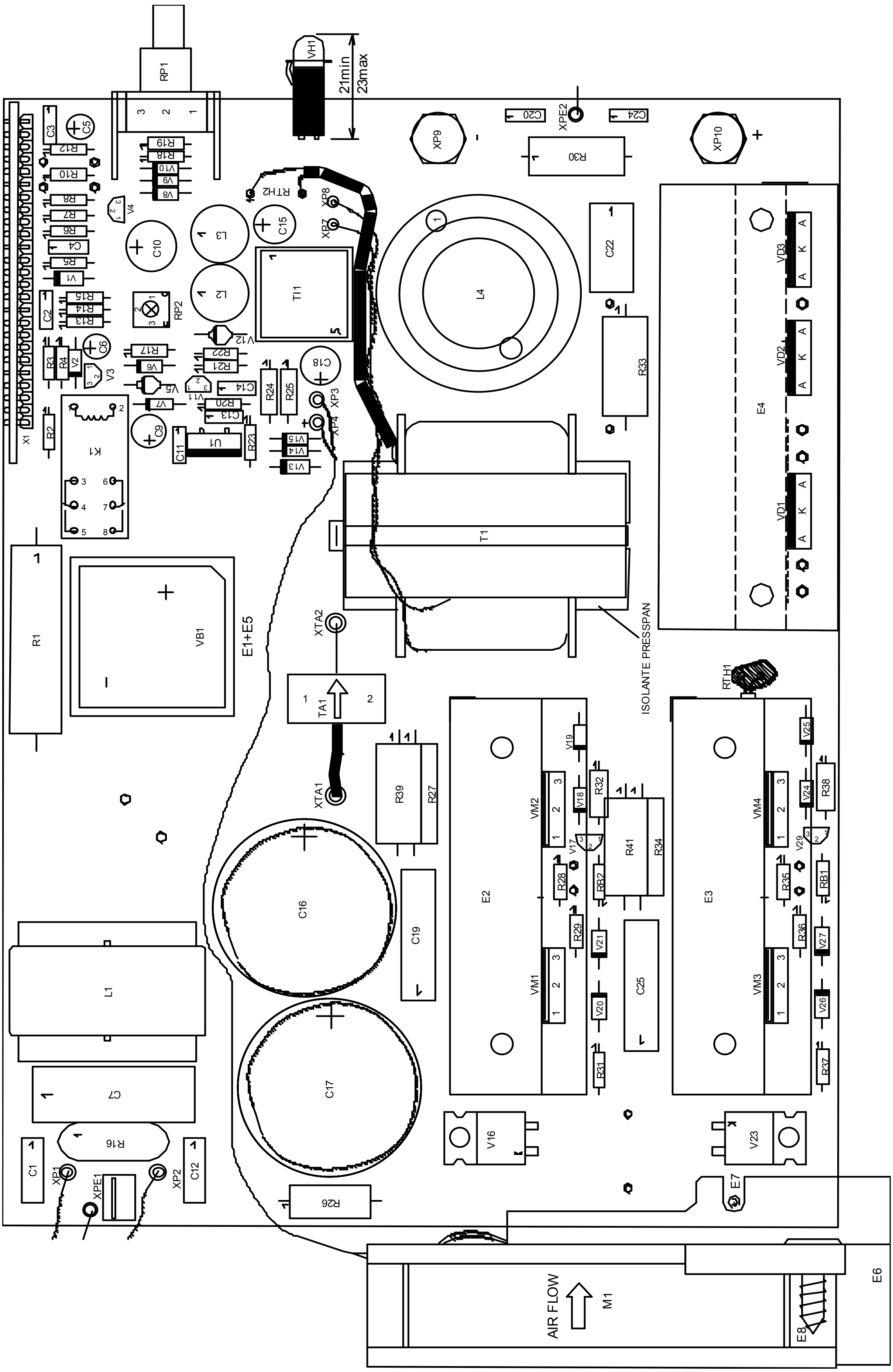


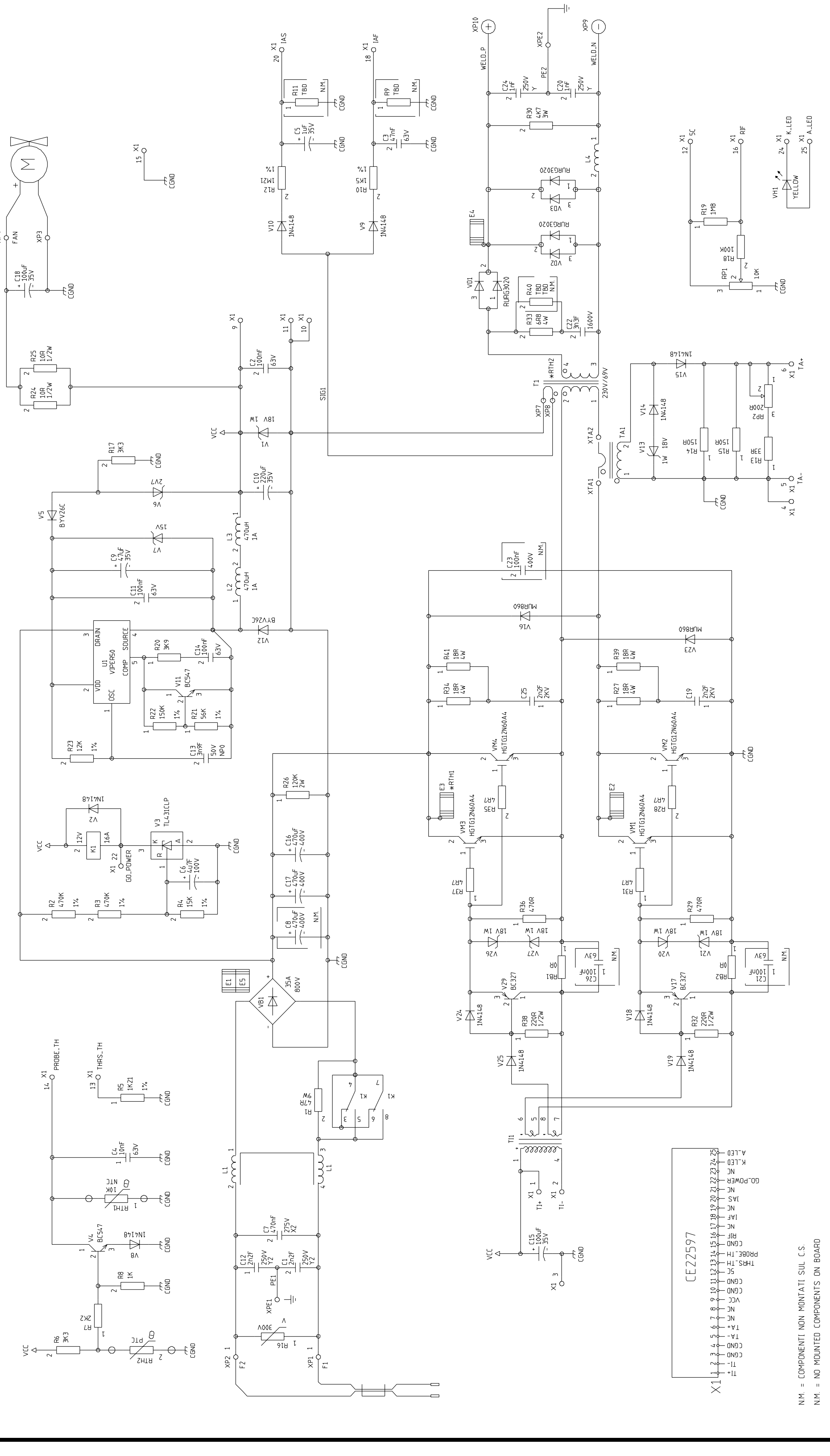
SAXO 1300

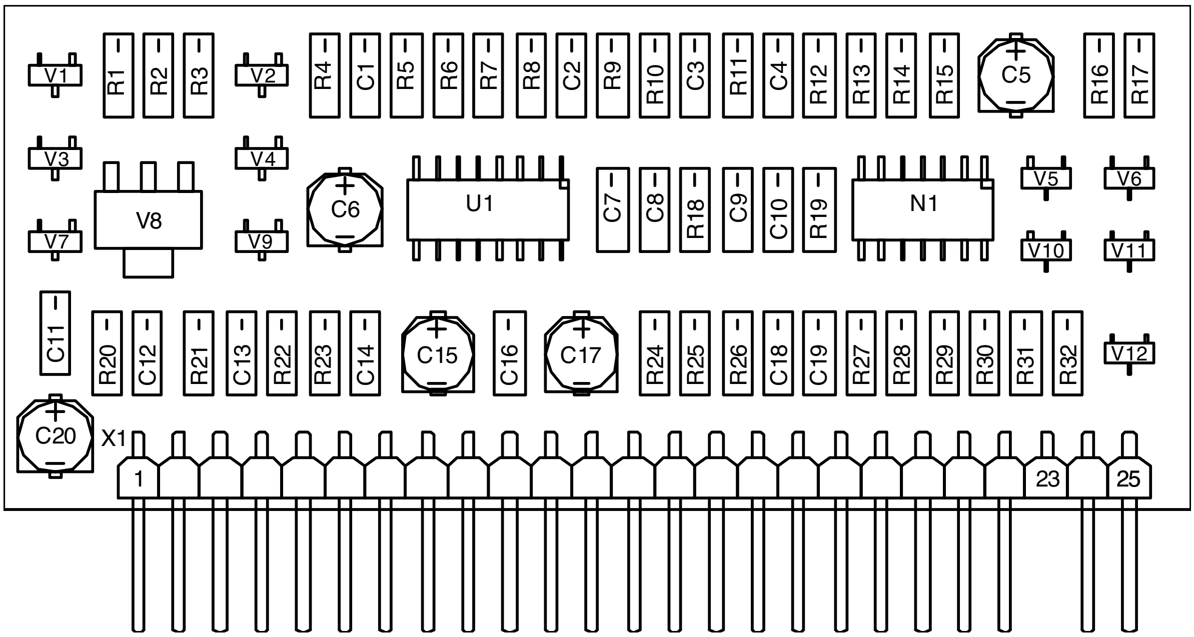
R.	COD.	DESCRIZIONE	DESCRIPTION	DESCRIPTION	BESCHREIBUNG	DESCRIPCIÓN
01	W000050018	CIRCUITO ELETTRON-ICO CE 22599	CIRCUIT BOARD CE 22599	CIRCUIT ÉLECTRON-IQUE CE 22599	STEUERPLATINE CE 22599	CIRCUITO ELEC-TRÓNICO CE 22599
05	W000050019	POTENZIOMETRO	POTENTIOMETER	POTENTIOMÉTRE	POTENTIOMETER	POTENCIÓMETRO
06	W000050028	AGGANCIO CINGHIA	STRAP ATTACHMENT	ANNEAU ACC. DE LA SANGLE	RIEMENKUPPLUNG	ENGANCE DE LA COR-REA
08	W000050020	CAVO ALIMENTAZIONE	POWER CABLE	CÂBLE D'ALIMENTA-TION	NETZKABEL	CABLE DE ALIMENT-ACIÓN
09	W000050021	PRESSACAVO	CABLE CLAMP	SERRE-CABLE	KABELSCHELLE	PRENSACABLE
11	W000050022	INTERRUTTORE	SWITCH	INTERRUPTEUR	SCHALTER	INTERRUPTOR
12	W000050023	RACCORDO USCITA	OUTLET CONNECTOR	RACCORD SORTIE	AUSGANGSAN-SCHLUSS	RACOR DE SALIDA
14	W000050026	MOTOVENTILATORE	ELECTRIC FAN	MOTOVENTILATEUR	MOTORLÜFTER	VEN. ELÉCTRICO
--	W000050029	CINGHIA NYLON	NYLON STRAP	COURROIE NYLON	NYLONRIEMEN	CORREA DE NYLON
56	W000050025	MANOPOLA	KNOB	BOUTON	DREHKNOPF	PERILLA
56	W000050024	CAPPUCCIO	HOOD	CAPUCHON	KAPPE	CAPUCHÓN
72	W000050027	SUPPORTO SCHEDA	SUPPORT	SUPPORT	AUFHANGUNG	SUPORTE

SCHEMA ELETTRICO - WIRING DIAGRAM - SCHÉMA ÉLECTRIQUE - STROMLAUFPLAN - ESQUEMA ELÉCTRICO




21min
23max
AIR FLOW
M1
ISOLANTE PRESSPAN
E1+E5
E2
E3
E4
E6
E7
E8
T1
L1
L4
VB1
TA1
K1
U1
XP9
XP10
C16
C17
C19
C25
R1
R16
R26
R30
R33
R39
R41
VM1
VM2
VM3
VM4
VD1
VD2
VD3
V16
V23
RTH1
RTH2
VH1
RP1
RP2


CE22597
N.M. = COMPONENTI NON MONTATI SUL C.S.
N.M. = NO MOUNTED COMPONENTS ON BOARD


V1
R1
R2
R3
V2
R4
C1
R5
R6
R7
R8
C2
R9
R10
C3
R11
C4
R12
R13
R14
R15
C5
R16
R17
V3
V4
V8
C6
U1
C7
C8
R18
C9
C10
R19
N1
V5
V6
V7
V9
V10
V11
C11
R20
C12
R21
C13
R22
R23
C14
C15
C16
C17
R24
R25
R26
C18
C19
R27
R28
R29
R30
R31
R32
V12
C20
X1
1
23
25

CIRCUITO ELETTRONICO - ELECTRONIC CIRCUIT - CIRCUIT ÉLECTRONIQUE - ELEKTRONIKSCHALTUNG - CIRCUITO ELECTRÓNICO
COLT 1300 - RIF. 1 - CE 22597 - COD. 800022597

